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COMMENTS

SEDIMENTATION OF VERY FINE SUSPENDED MATTER

When the study of water purification was taken up at the Lawrence Experiment Station of the Massachusetts State Board of Health more than thirty years ago, and when the chemical treatment of water by precipitants was studied, it was soon found that under some conditions material that theoretically ought to be precipitated and settle out, persistently remained in solution, or at least was so firmly held in the liquid that it did not separate. In all the years that have passed, this problem has remained one of the most troublesome ones in purification works. The amount of energy devoted to its solution by chemists has been very great. The practical results have been disappointingly small. Mr. Smith has taken up this subject in his paper in this number of the JOURNAL in a way that gives promise of adding to the practical knowledge of this obscure condition. It is to be hoped that he will be able to carry it to a successful termination.

There is a somewhat similar problem with smoke and furnace gases carrying finely divided solid particles. Great progress has been made in separating these solids in recent years It is to be hoped that corresponding progress may be soon reached in separating exceedingly fine particles from water.

In American water purification practice, one of our vices has been attempting to speed up processes that are necessarily slow.

Chemical reactions take time, and this is especially true when the quantities of materials that react are small and the temperatures low, and when the chemical reason for the reaction, so to speak, is only moderately strong.

In a coagulating basin that is too small, a reaction that will ultimately take place may have only partly taken place when the water leaves it for the filter. When this happens the water goes through the filter in an unstable condition, with the probability that the reaction will be completed in the pure water reservoir and in the mains, with the production of sludge deposits which are flushed forward at intervals, to the great annoyance of takers.

Waters containing lime, to the extent that they react with phenolphthalein, are likely to cause troublesome deposits of calcium carbonate. The author speaks of such a degree of alkalinity in treated water in some cases. The question may be raised as to whether it is not essential to ultimate success that such water should be recarbonated, or at least treated by a supplementary process that will remove this condition and make it so stable that calcium carbonate is incapable of separating from it.

ALLEN HAZEN.

THE IMPORTANCE OF COMPLETE INVESTIGATION WORK IN DETERMINING THE SAFETY OF WATER SUPPLIES FOR HUMAN CONSUMPTION

The importance of thorough investigation work in determining the safety of a given water supply for human consumption is now generally recognized by health authorities, but the significance to be placed on the various features involved in an investigation is still the subject of discussion. This disagreement, which largely concerns detail methods and their application, is to be expected, for the problem of determining the safety of a wide range of water supplies, or even the same source of supplies under varying conditions, is somewhat complex. There are certain fundamental principles, generally recognized by sanitary engineers, that can be applied and make it possible to give quite a definite opinion on the safety of a water supply. These principles recognize the fact that satisfactory investigation work on existing water supplies must include thorough field and analytical investigation before a safe opinion can be given. They further recognize that the individual undertaking the investigation must be properly trained to detect sanitary defects in the location, construction and operation of the